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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/815,412

03/31/2004

Cynthia S. Bell

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03/11/2005

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EXAMINER

TRA, TUYEN Q

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 03/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,412

Applicant(s)

BELL ET AL.

Examiner

Tuyen Q. Tra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-12 is/are allowed.
- 6) ☒ Claim(s) 1-6, 13, 14, 16, 17, 19-22, 24, 30 and 32 is/are rejected.
- 7) ☒ Claim(s) 15, 18, 23 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0304.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The declaration filed 08/20/04 is acceptable.

Drawings

2. The drawings 03/31/2004 in this application are accepted.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4-6, 13, 14, 16, 17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kastalsky (U.S. 6,288,824 B1).

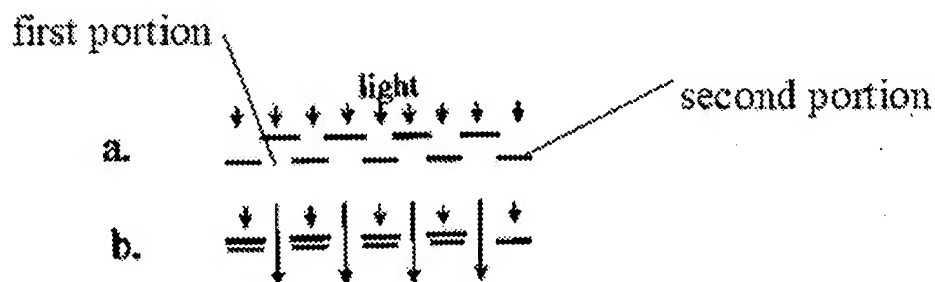
a) With respect to claim 1, Kastalsky discloses a display device based on grating electromechanical shutter in Figure 6 comprising of an array of micromechanical optical modulators, an electronic control system for operating the optical modulators in accordance with a received video signal, and an overlayer (item 59, Fig. 6) for the array of modulators to modify the fill factor (col. 4, lines 28-34) for incident light on the array of modulators, the incident light corresponding to at least one color constituent of a video signal (col. 5, lines 24-27).

b) With respect to claims 2 and 4-6, Kastalsky further discloses wherein the overlayer comprises an array of optical elements proximate the array of optical modulators, and positioned such that each optical element of the array directs incident light on a respective one of the optical modulators of the array; wherein the optical

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elements comprise plano-convex micro-lenses formed on a transparent sheet; wherein each optical modulator of the array has an optical section and a mechanical section and wherein the overlayer directs incident light on a respective optical section and reduces incident light on the corresponding mechanical section; wherein the overlayer focuses the light at a location proximate the respective optical section; a post to position the overlayer at a fixed distance from the array of micromechanical optical modulators.

c) With respect to claim 13, Kastalsky discloses a display device based on grating electromechanical shutter in Figure 6 comprising of an array of active surfaces (item 56), each having a first portion corresponding to an ON state and a second portion corresponding to an OFF state, and an array of electromechanical actuators (item 11), each corresponding to one of the active surfaces (each corresponding to each electrode bar 59), to translate the active surface to alternately expose the first portion or the second portion to incident visible light (col. 7, lines 8-20).



d) With respect to claims 14 and 16, Kastalsky further discloses the first portion comprises a substantially flat reflective surface (item 57, Fig. 6) to reflect incident light back in the direction from which it came; wherein at least one of the first surface and the second surface comprise a polarization-altering element.

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e) With respect to claims 17 and 19, Kastalsky further discloses one of the first surface and the second surface comprise a powered optical element; wherein an optical overlayer proximate the array of active surface to direct incident light to the active surfaces.

f) With respect to claim 20, Kastalsky discloses a display device based on grating electromechanical shutter in Figure 2 comprising of a substrate (item 30) having a first array of active surfaces (item 33) corresponding to one of an ON state or an OFF state with respect to incident visible light; a second array of active surfaces (item 41), each active surface (41) corresponding to an active surface (33) of the first array, the surfaces of the second array corresponding to the other of either an ON state or an OFF state with respect to incident visible light; and an array of electromechanical actuators (item 42), each corresponding to a surface of the second array, to move the surfaces of the second array (41) to alternately cover or uncover an active surface of the second array, the incident light striking a surface of the first array when the surface of the first array is uncovered and the incident light striking a surface of the second array when the surface of the first array is covered (see Fig. 6).

g) With respect to claims 21, 22 and 24-27, Kastalsky further discloses in Figures 2 and 6 wherein the surfaces of the first array of active surfaces are reflective in one direction and wherein the surfaces of the second array are reflective in another direction; wherein the surfaces of the first array are reflective and the surfaces of the second array are transmissive; wherein the surfaces of the second array are reflective surfaces and correspond to an ON state and wherein the through holes correspond to

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an OFF state; wherein the actuators each correspond to a surface of the second array, for translating the surfaces to alternately cover or uncover the surfaces of the first array; wherein the actuators each correspond to a surface of the second array, for rotating the surfaces about a remote pivot point to alternately cover or uncover the surfaces of the first array; an optical overlayer proximate the array of active surface to direct incident light to the active surfaces.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 28-30 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Shioya (U.S. 6,795,249 B2).

a) With respect to claim 28, Shioya discloses a reflective time-division image projector having a transmission in Figure 5A and 5B comprising of an array of active surfaces (item 31), each having a first portion (item 31 R, when portion 31R is in ON position, as shown in Figure 5B, then the other two portions 31B and 31G in OFF position) corresponding to an ON state with respect to incident visible light and a second portion corresponding to an OFF state with respect to incident visible light, the first and second portions being arrayed about a central axis (item 31a); and an array of electromechanical actuators (item 32, causes the disc to alternate between ON and OFF states by rotating each portion to projection state) each corresponding to one of

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the active surfaces, for rotating each active surface about its respective central axis to alternately expose the first portion or the second portion to incident visible light (Figure 5A and 5B).

b) With respect to claims 29, 30 and 32, Shioya further disclose wherein the first portion reflects a first selected color band of visible light, the active surfaces each further comprising a third portion corresponding to an ON state that reflects second color band of visible light; wherein the first portion is reflective in one direction and wherein the second portion is reflective in another direction; wherein an optical overlayer proximate the array of active surfaces to direct incident light to the active surfaces.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kastalsky (U.S. 6,288,824 B1), as applied to claim 1 above, in view of Ferguson (US 6,816,714). Kastalsky discloses a display device based on grating electromechanical shutter in Figure 6 comprising of an array of micromechanical optical modulators, an electronic control system for operating the optical modulators in accordance with a received video signal, and an overlayer (item 59, Fig. 6) for the array of modulators to modify the fill

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factor (col. 4, lines 28-34) for incident light on the array of modulators, the incident light corresponding to at least one color constituent of a video signal (col. 5, lines 24-27).

However, Kastalsky does not disclose microlenses. Within the same field of endeavor, Ferguson teaches array of microlenses (item 81) in Fig. 8.

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the optical device with acoustic lens system such as disclosed by Kastalsky, and with array of microlenses such as disclosed by Ferguson, for purpose of focusing display images.

Allowable Subject Matter

9. Claims 7-12 are allowed.

The reason for the indication of allowable subject matter is that an array of micromechanical optical modulators on the substrate, each optical modulator being proximate a respective one of the through holes, each modulator having a first position to allow incident visible light to pass through the respective through hole and a second position to prevent incident visible light from passing through the respective through hole, the incident light corresponding to at least one color constituent of a video signal disclosed in the claims is not found in the prior art.

10. Claims 15, 18, 23 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reason for the indication of allowable subject matter is that (claim 15) wherein the second portion comprises an angled mirrored surface to reflect incident

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light away from the direction from which it came; (claims 18, 31) a substrate having an array of through holes, each through hole being proximate a respective active surface, the through holes being transparent to visible light, and wherein one of either the first or second portions of the active surface is transparent to visible light to allow the incident light to pass through the respective through hole; (claim 23) wherein the active surfaces of the first array comprise through holes through the substrate, each through hole being proximate a respective surface of the second array, the through holes being transparent to visible light, and surfaces of the second array alternately cover or uncover a respective through hole to allow the incident light to pass through the respective through hole disclosed in the claims is not found in the prior art.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuyen Tra whose telephone number is (571) 272-2343. The examiner can normally be reached on Monday to Thursday from 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps, can be reached on (571) 272 - 2328. The fax number for this Group is (703) 872-9306.

tt

March 5, 2005


Hung Xuan Dang
Primary Examiner